

**COUNTY GOVERNMENT FIRE DEPARTMENT**  
**PREPARATIONS FOR THE Y2K PROBLEM**

STRATEGIC MANAGEMENT OF CHANGE

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## ABSTRACT

Executive fire officers and managers of the York County (Virginia) Department of Fire and Life Safety were recently tasked with ensuring that essential fire and life safety services were not interrupted on or before January 1, 2000 as a result of the practice in the information technology industry of using only two digits to represent years in a known century. Computers, software programs, and technology-based systems using only two digits to represent years may begin producing false data or fail altogether when asked to reference dates after the year 2000 (the Y2K problem).

The purpose of this research was identify best practices and suggest strategies for implementing and managing year 2000 (Y2K) readiness for the York County Department of Fire and Life Safety.

Historical and action research methodologies were used to answer the following questions:

1. What is the Y2K problem and how could it negatively impact fire departments?
2. Have best practices been developed for identifying and correcting Y2K problems?
3. What strategies should be adopted to ensure that essential fire and life safety services to York County citizens are uninterrupted in the event essential infrastructure systems or services effecting life safety fail on January 1, 2000?

Through the historical research a definition of the Y2K problem was developed and evidence provided as to the types of problems which fire departments could expect to experience as a result of the Y2K problem. The research also identified best practices for remediating the Y2K problem. Finally, the research identified opportunities and suggested strategies to ensure that essential fire and life safety services will continue uninterrupted by Y2K consequences. The opportunities and suggested strategies were used to prepare the reports final recommendations.

The recommendations included: heightening awareness of the Y2K problem; developing a Y2K compliance management team; developing and adopting a Y2K compliance management plan; developing and exercising a Y2K contingency plan that parallels the emergency plans used for other types of community wide disasters; re-engineer low tech options for critical but technologically dependent fire department systems, processes, and services; developing a public awareness campaign to prepare the citizens of York County to plan appropriately for Y2K consequences; and, take advantage of the many varied sources of information that are available to remain informed on Y2K issues.

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## INTRODUCTION

The widespread computer software programming practice of using only two digits for the year to save space in the storage of dates has created a situation which may cause many computers, software programs, and technology-based systems to produce errors or fail completely on or before January 1, 2000 because of their inability to properly account for the millenium date change. Upon learning of this problem, executive fire officers of the York County (Virginia) Department of Fire and Life Safety faced the formidable task of finding and fixing the problem in all of their affected systems. They were also responsible for developing contingency plans to ensure the continued provision of essential fire and rescue services past December 31, 1999, should local infrastructure systems or services with an impact on life safety fail.

The purpose of this research was to identify best practices and suggest strategies for the implementing and managing year 2000 (Y2K) readiness for the York County Department of Fire and Life Safety.

The three primary questions answered in this paper through historical and action research methodology are:

1. What is the Y2K problem and how could it negatively impact fire departments?
2. Have best practices been developed for identifying and correcting Y2K problems?
3. What strategies should be adopted to ensure that essential fire and life safety services to York County citizens are uninterrupted in the event essential infrastructure systems or services effecting life safety fail on January 1, 2000?

## **BACKGROUND AND SIGNIFICANCE**

Fire and rescue services in York County, Virginia are provided by the York County Department of Fire and Life Safety. The department is a combination career and volunteer department with over 180 members that operate out of a centrally located administration building and six stations located strategically throughout the County. The Department is made up of the Office of Emergency Management and four divisions, Fire and Rescue Operations, Prevention and Life Safety, Technical Services and Special Operations, and Emergency Communications.

The York County Department of Fire and Life Safety is a modern suburban county government fire department. Protecting approximately 52,000 people, and responding to over 8000 emergency calls annually, it provides a wide range of services including fire protection, code enforcement, fire inspections, plans reviews, fire investigations and public fire and life safety education. The department coordinates the county's emergency management activities, provides fire suppression, emergency medical services, rescue services and hazardous materials incident responses. It also provides: professional fire and life safety training and training program administration; command support services; information management services; computer network administration; grant administration services; victim and occupant/owner assistance services; special events coordination; water and dive rescue; and, technical rescue.

The department is responsible for all of the county's emergency and non-emergency wireless communications systems, including: two-way radios; cellular telephones; pagers; and radio towers. It maintains and manages the County's public safety answering point (the York County Emergency Communications Center), and its Enhanced 9-1-1 communications system. The Emergency

Communications Center uses a computer aided dispatching system (C.A.D.S.), as well as a computerized Head's-Up system (an address indexed occupant pre-existing and special needs data base).

The York County Department of Fire and Life Safety's career and volunteer personnel provide a number of value added programs to the citizens of York County from its six 'Neighborhood Fire Stations'. These programs include: child safety seat inspections; blood pressure checks; File of Life/Medical Information Cards; smoke detector installation; the temporary deployment of a speed awareness radar trailer; and, in-home assessments for fall prevention.

The department uses the full range of public venues from civic organization meetings, special event programs, tours, fire station open houses, static displays, emergency medical standby's, and local cable television programming to educate the public on its mission and present important life safety information/messages.

The department's apparatus and equipment are state of the art, routinely maintained and replaced on a regular schedule. The fleet contains a full range of emergency response vehicles, including: fire engines (triple combination pumpers, telesquirts, paramedic-engines, and rescue-engines), an aerial ladder truck, a tanker truck, brush trucks, rescue trucks, advanced life support ambulances, utility trucks, command support van, boat, staff cars, and specialty trailers.

The department's management and administration is provided by professionally trained and educated executive fire officers and managers, assisted by professional staff using modern public management practices, performance effectiveness measurement systems, and appropriately promulgated professional fire service/government standards and procedures.

The department's members participate in regional and statewide government, emergency management, and fire service organizations and initiatives. The department also provides, as well as draws upon, mutual aid as needed to ensure effective and efficient responses to emergencies.

At every level and in almost every activity, the York County Department of Fire and Life Safety relies upon some form of computer, software program, or technology-based systems to help it achieve greater effectiveness and efficiency in providing its essential life safety services to the citizens and visitors of York County, Virginia.

In the summer of 1998, executive fire officers and managers of the York County Department of Fire and Life Safety were tasked with ensuring that the department's operations and equipment would not be effected by a computer software problem called year 2000 or Y2K. The year 2000 was the date when the software problem, if uncorrected, was supposed to cause affected computers and computer operated/controlled systems to cease functioning correctly.

This research paper will provide a review of what the Y2K problem is and how it could negatively impact fire departments. It will identify the best practices that have been developed for identifying and correcting Y2K problems. It will also suggest strategies to ensure that essential fire and life safety services to York County citizens are uninterrupted in the event essential infrastructure systems or services effecting life safety fail on January 1, 2000.

This paper specifically relates to the National Fire Academy Executive Fire Officer Program's Strategic Management of Change Course because of the program's assertion that the executive fire officer must be capable of meeting the challenges of dynamic times, managing and facilitating the changes that occur in his or her organization, and ensuring the quality of service.



## **LITERATURE REVIEW**

Several types of literature were reviewed as part of the historical research for this project. Web sites addressing Y2K issues were visited and the information reviewed. Local government and information technology industry Y2K Project Management Plans were reviewed. Also reviewed were: texts; newspaper articles; business publications; and, management, government and fire service professional publications. Finally, York County memoranda, correspondence, and reports were reviewed.

The literature review was conducted with three major areas of concern in mind, each one coinciding with one of the research questions the project was trying to address: the Y2K problem and its potential negative impact on fire departments; Y2K readiness best practices; and, strategies to ensure that essential fire and life safety services are uninterrupted by Y2K consequences.

### **The Y2K Problem and its Potential Negative Impact on Fire Departments**

It is called the Millenium Time Bomb (Harwood,1997), Time Bomb 2000 (Yourdon, 1999), the Y2K Bomb (Thorp, 1998), the Millenium Bug (Grill, 1998), and Year 2000 Problem or Y2K . The problem is actually the result of a convention which predated computers. That convention was the use of two digits to identify a given year in a known century. Humphrey ( 1996), reported that early computer programmers continued the two digit year reference convention to save valuable programming time and costly data storage space. As time passed, the original reasons for continuing to use the two digit year convention disappeared (1996). However, the practice was not changed (1996).

Corbin (1996) found that the two digit year reference will create a problem for the computers, software programs, and technology-based equipment when on or before January 1, 2000, the systems try to use the two digit year reference to represent the year 2000. She stated that when that happens, systems using the two digit year reference which have not been converted, modified or replaced will begin to develop erroneous data, or fail altogether. Chandrasekaran (1998) stated that most systems, this event will occur when time moves into the new century, at midnight on December 31, 1999. For other systems, it has already begun to happen. Some systems that compute dates into the future for scheduling or to calculate finances for instance, are already beginning to demonstrate problems. “More than four in ten U.S. companies, according to one survey, have already encountered Y2K related system failures”. Regardless of precisely when they begin to experience problems, unmodified systems which use date references will be unable to recognize or deal properly with the date references from the next century. ( p. A24 )

Several authors (Corbin, 1996; Chandrasekaran, 1998; Davis, 1998; Yourdon, 1999) demonstrated that the estimate of the impact of Y2K on systems, services and even whole economies varied greatly from one source to another. Powell (1998), stated that “wildly differing scenarios, which range from apocalyptic to ‘business as usual,’ suggest that there is much about the Year 2000 Problem that is hard to predict. (p. 1 ).

Suiter stated in his October 2, 1998, testimony before the Special Subcommittee On the Y2K Technology Problem, that; “The Y2K technology problem involves several dimensions and touches upon nearly every aspect of day-to-day business in the world.” (p. 7 )

Chandrasekaran (1999) reported that the cost of repairing, modifying or replacing the two digit date references with references that will recognize and appropriately manipulate new century dates has

been estimated at over \$50 billion in the United States and between \$300 billion and \$600 billion worldwide. \$600 billion approximates the entire amount spent annually on new information technology according to the Information Technology Association of America's white paper *The Year 2000 Software Conversion: Issues and Observations*. Chandrasekaran (1999) He further reported that the Federal government costs to correct the Y2K problem is expected to exceed \$7.2 billion dollars.

Davis (1998 ) reported that as high as the estimated costs of Y2K preparedness found in the literature are, they only represented the costs of finding and converting or modifying the millions of lines of computer coding in software programs. They do not include the costs of dealing with the billions of microchips with date references embedded in technology-based equipment and systems. Grill (1999) reported that of the estimated 400 billion chips in existence, as many as 4 billion could have a date problem.

The International Technology Association of America (1998 ) also reported that most Y2 K cost estimates also do not include the cost of handling and or mitigating the failures expected from unconverted computers, software programs, and technology-based systems. Davis (1998) wrote that cost estimates of handling the worldwide consequences of Y2K related problems have been reported as high as \$2 Trillion dollars.

Ann Coffou, a Y2K analyst with a consulting firm is quoted by Chandrasekaran (1998) as having characterized Y2K as "one of the most expensive, labor-intensive, time-consuming problems mankind has ever faced." (p. A24 )

As modern service organizations, fire departments are not considered immune from the effects of the Y2K problem. Harwood (1997) cited that the Gartner Group, a well known independent research group which has specialized in consulting business and government on the Y2K problem , said

that “Although it is not likely that fire service systems will be the hardest hit, any major malfunction could have a major impact on public confidence in the service.” (p. 2).

Grill (1998) however, pointed out a disturbing trend, saying; “Many fire department and EMS [emergency medical services] leaders haven’t begun dealing with the potential problems that will directly and, probably more significantly, indirectly affect their departments and communities.” (p. 31 )

Brown (1998) stated in a letter sent to fire departments, leaders and organizations throughout the County, that Y2k might be felt “operationally and administratively” by the fire service. She noted that “almost any electrical device may be effected, including security systems, communications and dispatch systems, 911, reporting systems, and the microcomputers that help run apparatus and climate control systems.” (p. 1 ).

Kopczynski (1998) exhorted the chief officers and division managers of the York County Department of Fire and Life Safety to review “ radios, vehicles, medical equipment, phones, computers, C.A.D.S., [Computer Aided Dispatching Systems] , alarm systems, radiological monitoring equipment, gas detectors, vehicles, etc. “ for Y2K compliance. In addition he asked that they “identify other systems, equipment, etc., that may effect our [the department’s] operation or require a response, etc., when Y2K gets here, such as alarm systems in County buildings and other occupancies.” (p. 1 )

Harwood (1997) stated that fire department computers and technology-based systems should be checked out and corrected as necessary to avoid Y2K related errors and operational problems that may put the public they serve at risk. He also stated that fire departments need to evaluate their data sharing and links with outside organizations and systems for potential Y2K problems.

Grill (1999) pointed out that fire departments may not only have to deal with their own Y2K related system failures, but perhaps those of the community’s infrastructure or services as well. He

stated that to the extent that those systems or services are essential to citizen's lives and safety, the fire department will have to prepare solutions.

### **Y2K Readiness Best Practices**

There are excellent examples (Harwood, 1997; Information Technology Association of America, 1998; Los Angeles, 1998; Brown, 1999; Yourdon, 1999) of best practices for Y2K readiness to be found in the information technology, government, and management literature. Two models used by fire departments,

*The City of Los Angeles Year 2000 Compliance Project* (Los Angeles, 1998) and the *Year 2000 Compliance Guidance Notes for the Fire Service* (Harwood, 1997), provided the most direct application to the research aims of this project.

(Harwood, 1997; Information Technology Association of America, 1998; Los Angeles, 1998; Brown, 1999; Yourdon, 1999) all emphasized the importance of Y2K compliance projects to have the highest level of organizational leadership support for both resource allocation and to sustain an extensive program of change management. Harwood (1997), The Information Technology Association of America (1998), and Los Angeles (1998), all recommended that business case studies may have to be prepared before chief executive officers understand the importance of supporting the Y2K compliance initiative as a major change management program. Harwood stated that such support was essential to ensure that Y2K solutions were based on a "proper business evaluation of the alternatives, rather than knee-jerk technical reaction." (p. 4)

Although Los Angeles (1998 ) divided their Y2K compliance plan into six phases and Harwood ( 1997 ) divided the British Home Office plan for local authority fire brigades into five phases, both plans included the following general elements: awareness; assessment/evaluation; corrective action/remediation; testing/validation; and, implementation.

### **Awareness**

Los Angeles ( 1998 ) and Harwood (1997 )described the awareness element of the plan as that which educates all members of the organization in the nature and extent of the Y2K problem. Los Angeles also used this element as an ongoing portion of the change management program to provide “information, training, and tools” to help facilitate the Y2K compliance plan. (p. 14 )

### **Assessment/Evaluation**

Both plans (Harwood, 1997;Los Angeles 1998 ) described the assessment element as that part of the plan which defines the scope of the organization’s Y2K risk. This element involved an inventory of all of the organization’s computers, software programs, and technology-based systems, an evaluation of their Y2K compliance, a triage of their individual criticality to the provision of the organization’s essential services and the prioritization for remediation of those which are found to be non- Y2K compliant.

Los Angeles ( 1998 ) stated that the assessment element should include “all computer systems, including; automated business applications, packaged software, office suite products and associated interfaces and information trading partners, facilities/equipment and critical supply chains.” (p. 15 )

### **Corrective Action/Remediation**

Both plans (Harwood, 1997; Los Angeles, 1998) emphasized the importance of corrective actions/remediation method to be chosen based on sound business practice. Los Angeles (1998) stated that the decision should be based on the type of item or system, its triaged importance to essential services, its priority amongst systems to be made compliant, the time and resources available, and whether or not the item or system interfaces with others systems. Harwood (1997) continuously stressed the importance that a business advantage be sought in all Y2K compliance remediation. According to Harwood (1998) "Simply fixing the date problem in existing systems will eliminate risks and secure operations. However, it is an essentially sterile and unproductive investment, reactive in character. The point is that if systems have to be 'opened-up' in order to tackle date issues, it may well be possible to achieve some additional improvements in their performance, reliability, or functionality." Harwood (1998) also pointed out that the cost of remediation may in some instances make replacement of the item or system the best business option. (p. 9)

### **Testing/Validation**

Both Harwood (1997) and Los Angeles (1998) described the testing/validation element as that activity which would probably occupy the greatest amount of an organization's time and resources. Both sources documented the importance of testing remediated items individually, interfaced within the systems with which they trade information, and as an entire process, i.e., the processing of an emergency dispatch from the receipt of a 911 call to the report of arrival of the emergency unit on the scene.

### **Implementation**

The model plans (Harwood, 1997: and Los Angeles, 1998) described the implementation element as that part of the plan which required the monitoring of remediated computers, software

programs, and technology -based systems to ensure that they continued to work properly when re-integrated with existing equipment. Both sources stated this to be a critical element of the plan, pointing out that the remediation and use of computers, software programs and technology-based systems, especially those which involve data sharing, system interfaces and networks occur in dynamic environments.

Harwood (1997 ) pointed out that the implementation element should also include contingency plans for working without or around systems essential to the mission of the department should it become impossible for them to be made Y2K compliant in time. Taking that one step further, Los Angeles (1998 ) included the preparation and customization of each organization's emergency management plans to ensure the continued provision of essential services should there be a community wide disruption of critical services such as power or communications, or supplies, such as food, water, or fuel.

### **Strategies to Ensure that Essential Fire and Life Safety Services are Uninterrupted by Y2k Consequences**

Yourdon and Yourdon ( 1999 ) suggested the following strategies for individuals, organizations and governments to prepare for the possible Y2K consequences: identify possible risks; evaluate the likelihood the risk will occur and the impact such a risk would have if it did occur; regularly monitor the risks for increasing or decreasing evidence that it may occur; become proactive and develop action plans to either eliminate the risks before they occur or minimize their impact; and, develop reactive plans to minimize unforeseen risks that develop.



Forster (1998) wrote of the importance for emergency managers to assess the probable severity and duration of Y2K consequences so that they may develop mitigation plans and costs. Lubbock (1998 ) and Firehouse (1998 ) reported that the communities of Lubbock, Texas and Montgomery County, Maryland conducted Y2K drill simulations to assist with identifying possible problems and solutions to Y2K infrastructure, systems and supply failures.

Grill (1998) stated that contingency plans should address the disruption or loss of: “all utilities, such as electricity, water, gas and phones; food supplies; public safety; health care services; government payment to individuals and organizations; and, residents most at risk, such as the elderly and those requiring medication or home oxygen delivery.” (p. 33 )

Hayes (1999) wrote of the need for contingency plans to contain a method of providing the public information with which to “make calm, rational decisions” on how to be properly prepared for possible Y2K disruptions. (p. 16)

Hayes ( 1999 ) stated that “ultimately, communities that will fare best will be those that possess the characteristics that enable survival during any major crisis; a solid communications infrastructure, cooperation between public- and private-sector officials, a citizen base that is aware and psychologically prepared, a strong sense of priority about the health and safety of citizens, and a contingency plan that is well-rehearsed and easily implemented.” (p. 15 )

## **PROCEDURES**

The direction and procedures for the selection and conduct of the historical and action research methodology used by this project was obtained through the National Fire Academy Executive Fire Officer Program’s Executive Development Course. The selection of the topic was determined when the

author returned from the National Fire Academy Executive Fire Officer Program's Strategic Management of Change and learned that he was going to have to ensure that his division was Y2K compliant.

County government memoranda, and e-mail were the first documents to expose the author to the subject. Discussions with other Department of Fire and Life Safety division heads revealed a general lack of knowledge about how to determine what might be impacted by the Y2K problem or how to fix it once found. Similar discussions with other local government officials revealed a similar lack of sufficient knowledge on the subject to develop action plans.

An initial search of fire, emergency medical services, emergency service, municipal and county government professional periodicals produced several articles describing the problem and urging action but providing very little in the way of best practices or actual strategies. This lack of substantive discussion of Y2K issues in professional fire service literature constituted the major limitation of the research.

In October of 1998 the author received a copy of a pamphlet printed by the Federal Emergency Management Agency United States Fire Administration entitled Year 2000. This pamphlet listed a number of information sites on the World Wide Web that were dedicated to the Y2K topic. A search of the World Wide Web quickly yielded information on the nature, cause, and potential impact of the Y2K compliance and associated leap year problems. Web sites discussed federal and state government Y2K initiatives. Continued search of the web sites also yielded a number of sources which specifically discussed the Y2K issue's potential impact on local government and fire and rescue services in particular.

The next phase of the literature search was conducted by computer. The author accessed the National Fire Academy Learning Resource Center's Online Card Catalog from the World Wide Web. Several titles from professional journals and books on the Y2K problem identified in the search were obtained from the Williamsburg (Virginia) Regional Library and the Virginia Beach Fire Training Center Library.

Additional searches of business and management literature yielded the majority of substantive information on managing Y2K compliance issues and non-compliance consequences. The search within the business and management literature was quickly narrowed to the fields of information technology, information systems management, and local government. Best practices for managing the 2YK compliance project were found within this area.

A search of local government emergency management literature yielded a number of resources and models for consequence planning. It also provided a number of examples of community preparedness exercises designed specifically to test the response to failures of essential infrastructure systems and services. This latter review was conducted in search of lessons learned and suggested strategies for the York County Department of Fire and Life Safety to employ in its own contingency planning process. This constituted the action research methodology involved in the project.

## **RESULTS**

The results of this research project will be organized in response to the three original research questions.

1. What is the Y2K problem and how could it negatively impact fire departments?

The literature gave ample definition and description of the Y2K problem, what caused it, and how it came about. It presented evidence of how it could affect computers, software, software programs, and technology-based systems which use and/or share the two digit year reference if not made compliant or replaced. In addition, the information technology, business, management, and government professional literature, explained in detail the scope of the problem and the many varied and unique problems associated with Y2K compliance change management efforts. It explained why some Y2K related errors and failures have occurred and why they will continue to occur regardless of the efforts expended to correct the problems.

The research showed that fire departments can expect to be negatively impacted by the Y2K problem. They will be negatively impacted by :the time and resources required to manage their Y2K compliance effort; the errors and failures of their own computers, software programs, or technology-based equipment; or, the need to plan for and respond to the failure of essential infrastructure systems or services in the community.

The research also highlighted the fact that the Y2K problem provides well led and well managed fire departments to: conduct a top to bottom evaluation of their systems; improve or totally re-engineer systems and services for a business advantage; develop contingency plans and alternative methods to continue to provide essential services in a hostile environment; and, enhance its reputation for being well prepared and the community's safety net in times of emergency. Regardless, the research showed that many fire departments are not preparing for the consequences of Y2K.

2. Have best practices been developed for identifying and correcting Y2K problems?

The research presented excellent Y2K compliance management change plan models used by business, government and fire department organizations to identify and correct Y2K problems. In addition, it was interesting to note that all of the models incorporated the essential elements of the Change Management Model taught in the National Fire Academy Executive Fire Officer Program's Strategic Management of Change Course (1996): analysis; planning; implementation; and evaluation/institutionalization.

Two Y2K compliance management plan models stood out in their demonstrated application for use by fire departments to manage the Y2K problem. Research showed that both plans incorporated: an awareness of the problem amongst the members of the organization; an assessment of the nature and extent of the Y2K risk and an analysis of the remediation options and costs; compliance/remediation actions based on sound business practice; individual item, system, and process testing/validation of remediation efforts; implementation of a monitoring program to for remediated items, a contingency plan for those items that fail to be remediated in time, and a larger plan for the continuation of essential services in the face of community wide disruptions of critical systems and services.

3. What strategies should be adopted to ensure that essential fire and life safety services to York County citizens are uninterrupted in the event essential infrastructure systems or services effecting life safety fail on January 1, 2000?

The research provided many strategies to assist York County Fire and Life Safety ensure that York County citizens receive uninterrupted fire and life safety services in the event essential infrastructure systems or services fail on January 1, 2000. Particularly attractive is the idea of developing a contingency plan for Y2K consequences that parallels the emergency plans used for other types of community wide disaster, exercising the plan, and then using the results to pre-plan and pre-

position solutions to major system, service, and supply problems identified by the exercise. Another attractive strategy was the idea of re-engineering low tech options for critical but technologically dependent fire department systems, processes, or services.

Another strategy was suggested by the increasing flow of Y2K information on the World Wide Web. This resource could be used by the York County Department of Fire and Life Safety to remain informed of the latest developments concerning this rapidly changing subject. Through the World Wide Web's links, individual managers could find direct access to Y2K programs, grants, training, remediation tools, consulting services, legislation, information, and, the products and lessons learned from other organizations and Y2K compliance plan managers.

## **DISCUSSION**

The results obtained through this research demonstrated that the fire service as a whole has not mobilized its collective experience in the management of crisis to take on the remediation of the Y2K problem within their organizations or planning for the Y2K consequences in their communities. The fact that the majority of the literature addressing Y2K preparedness came from disciplines other than the fire service confirms Grigg's (1998 ) assessment that many executive fire officers are not adequately dealing with the Y2K problem. It appears that in spite of the media hype and billions of dollars being spent globally by private corporations and governments to prevent or minimize the effects of the Y2K problem, fire service leaders are content to be reactive instead of proactive on the issue.

The results also validated the National Fire Academy's Executive Fire Officer Programs' insistence (National Fire Academy, 1998) on the importance of executive fire officers being comfortable

with change management planning so that they can deal with the kind of operational and business decisions that accompany “rapid and functional technological changes “. ( p. I-2 )

The definition of the Y2K problem obtained from the research was sufficiently detailed to ensure that executive fire officers would be able to grasp the complexity of the problem, its potential impact on their organizations, and the possible ramifications for community infrastructures and essential services.

The best practices identified through the research provided a detailed framework for Y2K compliance project management. Most exciting was the clear direction it provided for the development of remediation decisions on the basis of good business practice with the goal of obtaining a business advantage. This clearly demonstrates the value of managing change versus being managed by change.

This best practices identified through this research also demonstrated that the fire service can improve its organizational effectiveness by seeking and employing best practices and functioning collaboratively with the business and government professions in solving common problems. Each profession brings its own strength to such endeavors. Business’ unique “bottom line approach” tends to seek a product worthy of any specific effort. The fire service brings a unique ability to problem-solve, present and work-through alternative solutions as it often must on emergency scenes. Government’s power, media access, and public purse, can raise public awareness , mobilize resources and provide needed support.

The strategies to ensure the uninterrupted delivery of essential fire and life safety services in the event of Y2K induced infrastructure system or service failures represent the most important findings of the study in that they represents the most productive work that can be undertaken by fire department organizations with the time remaining before January 1, 2000.

The implications of the study for the York County Department of Fire and Life Safety are twofold. First, the department should seek to employ the best practices identified in the research for Y2K compliance management. Secondly, the department should develop contingency plans for Y2K that parallel the existing community disaster plans.

## **RECOMMENDATIONS**

As a result of this project and in consideration of the strategies available to ensure that essential fire and life safety services to York County citizens are uninterrupted in the event essential infrastructure systems or services effecting life safety fail on January 1, 2000, the following recommendations are presented:

- Heighten the awareness of Y2K and its potential negative impact on the department amongst department executive fire officers and managers.
- Develop a Y2K Compliance Management Team of executive fire officers and managers.
- Develop and adopt a Y2K Compliance Management Plan based upon the identified best practices.
- Compare the department's Y2K remediation actions to date to those suggested by the Y2K Compliance Management Plan best practices.
- Become involved in the County's Y2K Compliance Management Team or become an advocate for the creation of such a team if none exists.



- Develop a Y2K Contingency Plan for Y2K consequences that parallels the emergency plans used for other types of community wide disaster.
- Exercise the Y2K Contingency Plan when developed and use the results to pre-plan and pre-position solutions to major system, service, and supply problems identified by the exercise.
- Re-engineer low-tech options for critical but technologically dependent fire department systems, processes, and services.
- Develop a public awareness campaign to prepare the citizens of York County to plan appropriately for possible Y2K consequences.
- Take advantage of Y2K programs, information, grants, training, remediation tools, consulting services, legislation, products and lessons learned made available through fire service, emergency management, management, information technology, and government sources on the World Wide Web.

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